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THE STRATEGIC NUCLEAR BALANCE

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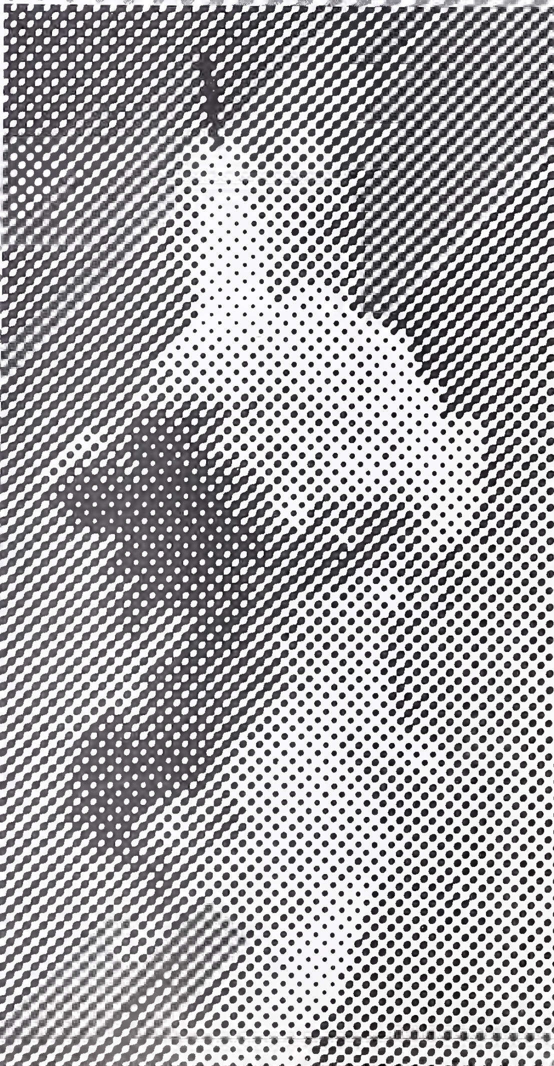

COMMANDERS DIGEST
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THE STRATE NUCLE BALA

GENERAL GEORGE S. BROWN, CH

Strategic nuclear offensive forces are a critical element of U.S. deterrent strategy. In addition to their ability to inflict massive military damage on any potential enemy, they must have, and be perceived to have, selectivity, survivability and flexibility. Should deterrence fail, these forces must be capable of flexible employment in order to allow conflict termination at the lowest feasible level. If such escalation control fails, then the forces must permit conflict termination on the most favorable terms possible. Inherent in this strategy is the need for weapons in sufficient numbers, and of appropriate characteristics, to maintain a stable strategic balance in the face of Soviet technological advances. Because of this necessity, the U.S. strategic force structure is to some degree influenced by Soviet force programs. Major problems in this regard include accurate assessment of Soviet capabilities and trends, and the application of limited resources to maintain the balance.

Emphasis on planning and developing strategic offensive forces which are capable, survivable, and versatile must continue. The United States TRIAD of land-based intercontinental ballistic missiles (ICBMs) and submarine-launched ballistic missiles (SLBMs) and strategic bombers provides this combination of characteristics.

Programs have been initiated to improve ICBM survivability, to improve the nuclear powered ballistic missile submarine (SSBN) force to protect it from Soviet technological breakthroughs, and to improve the bomber force. These programs are necessary for maintaining essential equivalence.

U.S. strategic defensive forces combine with offensive forces to support the deterrence strategy. Strategic defensive forces include those whose mission is air defense, air and missile surveillance and warning, and space surveillance. During peacetime, these forces have the mission of preserving the territorial and aerospace integrity of the United States.

Negotiations

In the Strategic Arms Limitation Talks (SALT), the United States seeks to reduce the likelihood of nuclear war and maintain strategic stability at lower force levels, thereby enhancing U.S. national security. The Joint Chiefs of Staff support arms limitation agreements that are equitable and verifiable.

Pending outcome of the SALT II negotiations, the United States has continued to plan for forces within the Vladivostok framework, the Interim Agreement on Limitation of Strategic Offensive Arms and the 1972 Antiballistic Missile (ABM) Treaty with its 1974 Protocol.

U.S.-U.S.S.R. Strategic Offensive Forces

ICBM Forces

ARMS LIMITATION CONSIDERATIONS

The Interim Agreement on Limitation of Strategic Offensive Arms prohibits construction of additional fixed, land-based ICBM launchers after May 26, 1972. Modernization and replacement of launchers is permitted, provided that silo dimensions are not increased more than 15 per cent. The Agreement also prohibits conversion of ICBM launchers deployed prior to 1964, or launchers for "light" ICBMs (e.g., the Soviet SS-11, the US MINUTEMAN) into launchers for "heavy" ICBMs deployed after 1964 (e.g., the Soviet SS-9 and SS-18).

As a result, the fixed ICBM force was limited to 1,054 launchers for the United States. For the U.S.S.R., the force level included 1,607 launchers. The Protocol to the Interim Agreement, however, permits increases in SLBM launchers for each side, provided that an equal number of ICBM launchers deployed prior to 1964 or SLBM launchers on older submarines are dismantled or destroyed. The Soviets have exercised this option to add to their SSBN fleet and as a result are reducing their ICBM force.

In a SALT II agreement based on the Vladivostok framework, it would not be necessary to dismantle or destroy older ICBMs in order to add additional SLBMs, provided that the aggregate limit of 2,400 strategic nuclear delivery systems (ICBM launchers, SLBM launchers, and heavy bombers) or the sublimit on MIRVed missiles is not exceeded. Construction of additional fixed land-based ICBM launchers, however, still would not be permitted.

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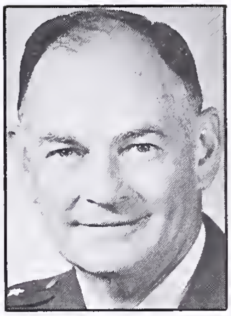


GENERAL BROWN

RMAN of the JOINT CHIEFS OF STAFF

The MINUTEMAN force is being modernized to provide improved accuracy, increased yield and improved targeting flexibility.

ERVIEW

Chart 1 presents scale drawings and comparative dividual characteristics of U.S. and U.S.S.R. ICBMs rrently deployed or under development.

Chart 2 shows latest U.S. estimates of U.S.-U.S.S.R BM forces through the end of FY 1978.

oviet ICBM Forces

At this time, the Soviets have more than 1,400 ICBM unchers at operational complexes. The launchers ure is reduced from last year due to the dismantling SS-7 and SS-8 launchers in accordance with the erim Agreement.

The Soviet deployment program for new ICBMs is now ginning its fourth year. New Soviet ICBMs have eater reliability, range, payload and accuracy than e systems they are replacing. Moreover, ICBM curacies are expected to improve further as the viets continue their test programs and refine and odify selected components. The Soviet hard target kill pability could be somewhat better than previously timated.

The Soviets are also pursuing initiatives which will prove the survivability of their ICBM force. The newly ployed missiles have silos with substantially greater uctural hardness than the ones they are replacing, d they continue to construct hardened launch control cilities. The Soviets have also undertaken to insure e survivability of their communications systems ough hardness and redundancy.

Two missile systems, the SS-20 intermediate-range llistic missile (IRBM) and the SS-16 ICBM, have been veloped as mobile systems. To date, only the SS-20 s been deployed in the mobile mode.

U.S. ICBM Forces

The U.S. ICBM force of 1,054 will be maintained. The force will be composed of 54 TITAN, 450 single RV MINUTEMAN II and 550 MIRVed MINUTEMAN III missiles. The MINUTEMAN III force is being modernized to provide improved accuracy, increased yield and improved targeting flexibility.

The U.S. ICBM force has a combination of characteristics, including positive command and control, high reliability and alert rates, accuracy, and timely weapons delivery which provide a flexible range of response options. Efforts are underway to improve further these capabilities by incrementally improving existing systems in the near term and by development of a new ICBM system.

In addition, it incorporates a command data buffer which permits retargeting of a MINUTEMAN III missile in 25 minutes and retargeting of all 550 MINUTEMAN III missiles in less than 10 hours. This capability increases the flexibility and responsiveness of the system. Further, it is proposed that this retargeting capability be incorporated in the Airborne Launch Control System.

Other improvements in the MINUTEMAN III missile are accuracy and yield. Improved software for guidance systems currently being deployed should permit a lower operational system circular error probable. The MK-12A higher yield RV (Reentry Vehicle), forecast for deployment, will markedly improve its utility.

Continuing development efforts include a maneuvering reentry vehicle for possible deployment on ICBMs and SLBMs. The MINUTEMAN silo upgrade program, which has added a significant degree of protection to the ICBM force against blast, shock and other effects, has been completed for MINUTEMAN III and is nearing completion for MINUTEMAN II. These silo improvements, combined with reliable sensor indications of impending attacks, can increase survivability and reliability.

These improvements, while adequate to protect MINUTEMAN silo survivability in the near term, may be insufficient in the longer term as forecast improvements in Soviet counterforce capabilities are fielded. Unless these improvements can be restrained, either through verifiable agreement or as a result of unilateral Soviet action, silo survivability could be reduced in the mid-to late-1980s.

Measures to ensure the ICBM contribution to the TRIAD at an acceptable level in the face of these improved Soviet capabilities will be required. The most feasible and cost effective method for preserving that contribution is the multiple-aim-point-based MX.

U.S.S.R. Missiles

SS-7 AND SS-8

The SS-7 and SS-8 are old ICBMs that were designed and largely deployed before the mid-1960s. Originally, 209 launchers at operational complexes were constructed for these systems. As noted earlier, the Protocol of the Interim Agreement permits the substitution of SLBMs for ICBMs deployed prior to 1964. As of Oct. 1, 1977, a number of SS-7 and SS-8 launchers had been dismantled to allow increases in the Soviet SLBM force.

SS-9/SS-18

For the fourth straight year, the number of SS-9 launch groups being converted to the SS-18 increased. Currently, approximately 100 SS-18 silos are operational, and work is continuing on others. The SS-18 is a modern large ballistic missile (MLBM), having greater throw-weight capability than any U.S. ICBM. It is anticipated that all the SS-9 silos will be converted for the SS-18.

The Soviets have developed three variations of the "cold-launched" SS-18, and probably will deploy all three. In a cold launch, the missile is "popped out" of its silo by a gas generator before the main booster motors are fired. As a result, the silo is not heavily damaged and could be reloaded. In addition, cold launch also allows the firing of a missile with greater throw-weight. The Mod 1 and Mod 3 have single RVs; Mod 2 has a MIRV capability of eight to ten RVs. The Mod 3 has an operational range considerably greater than that of the other two SS-18 variants, and is more accurate than the Mod 1.

The Soviets may plan to employ a mix of the single RV variants of the SS-18, although the Mod 3 may eventually replace the Mod 1. However, the Mod 2 is expected to be the most widely deployed variant of the SS-18, largely because of its MIRV capability.

SS-11/SS-17

More than 60 "cold-launch" SS-17s are now operational in converted SS-11 silos. Conversion of other SS-11 silos is underway.

The pace of conversion of the SS-11 silos to the SS-18 configuration is slower than expected last year. Conversions probably will be limited at each complex to avoid having too many launchers off line simultaneously.

The MIRVed SS-17 variant has been installed in operational silos. In February 1976, the Soviets began testing the SS-17 with a single RV. However, under U.S. SALT II proposals, all SS-17 silos would be counted as MIRVed since they have been tested in a MIRV mode.

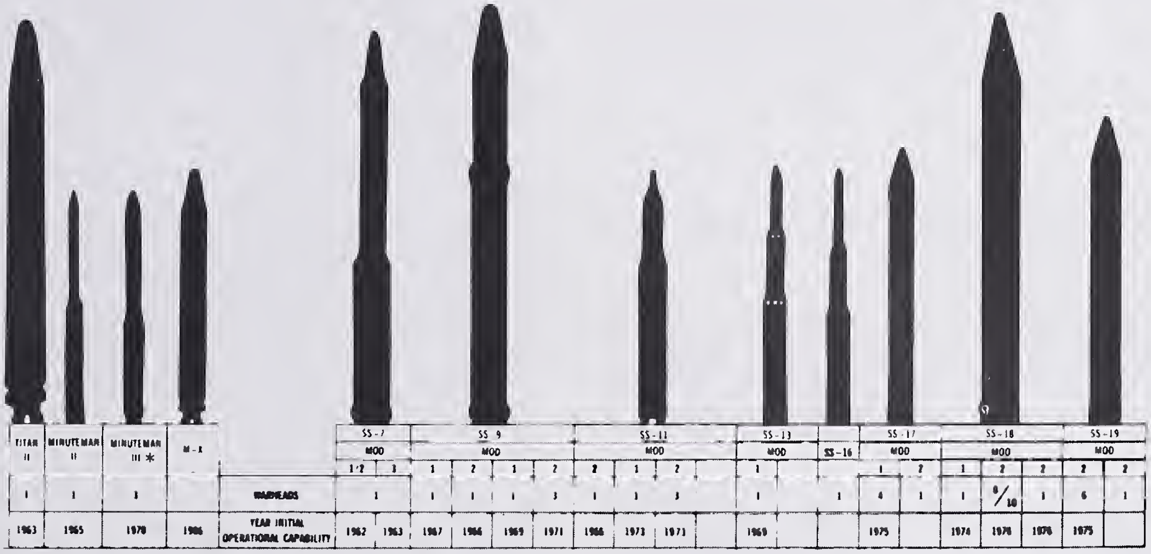
SS-11/SS-19

There are currently more than 200 operational silos for the SS-19, with additional SS-11 silos under conversion. The SS-19s are capable of carrying six MIRVs. The Soviets are now testing a single RV with the SS-19. However, as with the SS-17, all SS-19 silos would count as MIRVed missile launchers under U.S. SALT II proposals.

SS-13/SS-16

Development of the initial version of the SS-16, a three-stage ICBM, was essentially complete by the end of 1974. This version carries a post boost vehicle (PBV) and a single RV payload. The status of this program is unclear.

COMPARISON OF US AND USSR ICBMs



TITAN II	MINUTEMAN II	MINUTEMAN III *	M-X		SS-7		SS-9				SS-11				SS-13			SS-17		SS-18			SS-19	
					MOD		MOD				MOD				MOD		SS-16	MOD		MOD			MOD	
					1/2	3	1	2	1	2	2	1	2		1			1	2	1	2	2	2	2
1	1	3		WARHEADS	1		1	1	1	3	1	1	3		1		1	4	1	1	8/10	1	6	1
1963	1965	1970	1986	YEAR INITIAL OPERATIONAL CAPABILITY	1962	1963	1967	1966	1969	1971	1966	1973	1973		1969			1975		1974	1976	1976	1975	

Chart 1

LAND-MOBILE MISSILES

The Soviets appear to have developed the SS-16 as a mobile missile. They have apparently decided not to deploy it in its mobile mode at this time. They may be expected to continue mobile ICBM development efforts to further their technology in this area. This development will also provide a hedge against the chance of increasing vulnerability of silo-based ICBMs in the future.

An even more serious question centers on Soviet deployment of the MIRVed SS-20 mobile Intermediate Range Ballistic Missile (IRBM) and the relationship of that system (which is outside SALT parameters so long as its range is less than 5,500 km) to the SS-16 which is included in SALT. The SS-20 comprises the first two stages of the three-stage SS-16. By upgrading SS-20 deployment to the SS-16 stage and deployment to the SS-16, the Soviets could increase their mobile ICBM capability relatively quickly. This could be accomplished by the addition of a third SS-16 stage and payload to the two SS-20 stages. Such action could significantly increase the number of ICBMs in Soviet intercontinental forces. Upgrade of substantial numbers of SS-20 IRBMs to SS-16 ICBMs and their planned use as long-range missiles could degrade capabilities against regions near Soviet borders.

FUTURE ICBM DEVELOPMENTS

The Soviets have R&D programs in progress for more advanced ICBMs. Up to eight years of preflight development is usually required to bring a new missile to the flight test stage. During the early development period, there is usually little or no evidence of an identifiable new program. As a new system nears the flight test phase, information is more likely to become available. Consequently, more insight is available on systems that could be flight tested in the next few years—that is, by 1980. For the longer term, the United States must rely on past Soviet development patterns, on assessment of Soviet requirements, and on technology trends which are likely to influence future ballistic missile programs.

U.S. Missiles

TITAN II

Fifty-four TITAN II missiles were declared operational in 1963. The capabilities they provided at that time have remained relatively unchanged. The TITAN warhead is the largest in the U.S. ballistic missile inventory, and the high day-to-day alert rate makes the TITAN a dependable strategic deterrent. Today, as in the past, efforts are directed toward extending service life and lowering annual operating costs. The original guidance set is being replaced by a state-of-the-art guidance system. While no improvement in accuracy is expected, increased cost effectiveness should result.

MINUTEMAN II

The last of the current inventory of 450 MINUTEMAN II was deployed in 1967. Since then the MINUTEMAN force has been characterized by high day-to-day alert rates, low operating costs, and high reliability. Incremental improvements have increased its flexibility and the silo upgrade program has improved system survivability. Its single warhead and its accuracy provide a capability for all but the hardest of installations. Its long range and single warhead provide a weapon for use against geographically isolated targets. There are no currently approved modernization programs.

MINUTEMAN III

MINUTEMAN III was deployed from 1970 to 1975. The accuracy with which a MINUTEMAN III can place warheads on three targets and its remote retargeting capability provide operational flexibility and confidence. Modernization programs include an improvement in accuracy and the replacement of the MK-12 reentry vehicle with the MK-12A. These improvements will help offset Soviet strategic momentum.

FUTURE ICBM DEVELOPMENTS

The MX program is the only significant U.S. ICBM initiative being proposed. This system, with improved guidance and increased numbers of highly accurate RVs, together with highly survivable basing (such as buried trenches), could provide a valuable counterweight to Soviet strategic momentum and a hedge against future uncertainties in the strategic environment. The deployment of the MX in an alternate basing mode would allow the United States to retain prompt, high-confidence, retaliatory capabilities beyond the year 2000.

SLBM Forces

ARMS LIMITATION CONSIDERATIONS

As noted earlier, the Interim Agreement limited submarine-launched ballistic missile (SLBM) launchers and modern ballistic missile submarines to the number operational and under construction on May 26, 1972, but allowed for additional construction as replacement for older ICBMs or SLBMs. As of the date of the agreement, the United States had 656 accountable SLBM launchers; the Soviets had 740. The Protocol of the Interim agreement, however, permitted the United States and the Soviets to increase the size of these forces—the United States to 710 SLBM launchers on 44 nuclear powered ballistic missile submarines (SSBNs); the Soviets to 950 SLBM launchers on 62 SSBNs. Any increase in SLBM launchers over those numbers operational and under construction on May 26, 1972, would require the dismantling and destruction of an equal number of ICBM launchers deployed prior to 1964 or SLBM launchers on older submarines.

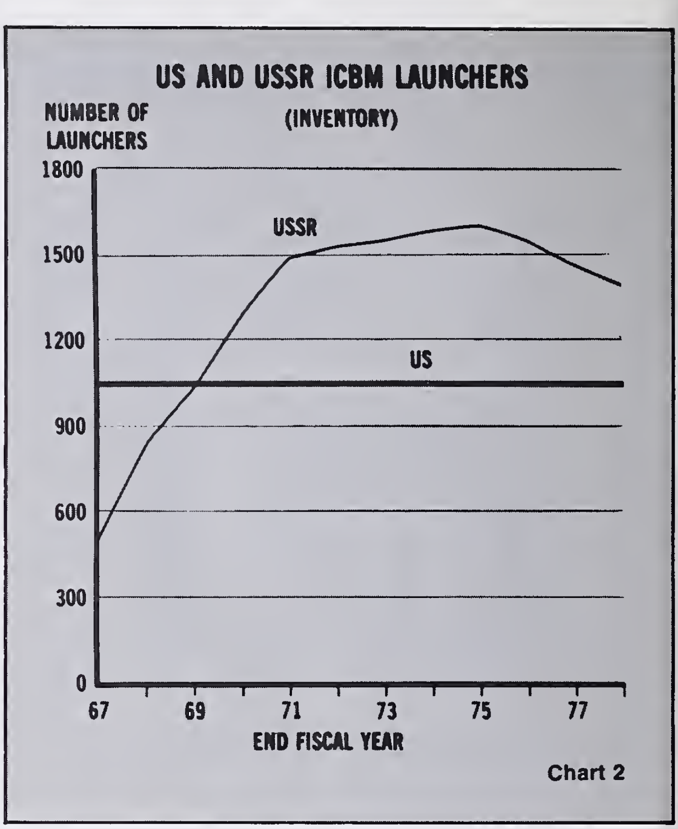


Chart 2

OVERVIEW

The following charts provide an overview of the comparative SLBM forces and programs.

Chart 3 presents scale drawings and comparative individual characteristics of U.S. and U.S.S.R. SLBMs currently deployed or under development.

Chart 4 provides a comparison of the ballistic missile submarine characteristics and a match-up between ship and missile system in each class.

Projected on Chart 5 are latest estimates of U.S./U.S.S.R. SLBM forces through the end of FY 1978. Once a new submarine commences sea trials, its launchers are counted under the Interim Agreement even though considerable time may elapse before it becomes operational.

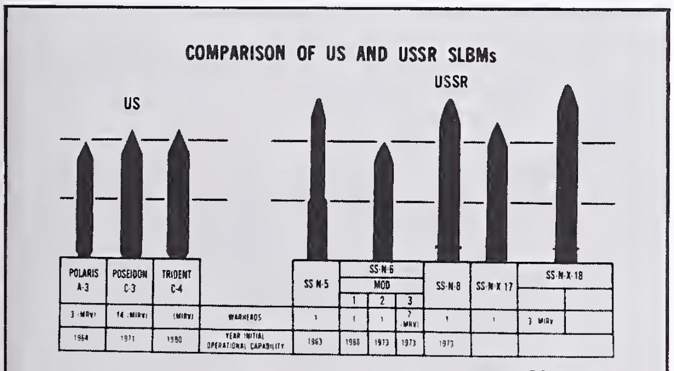
The Soviets began to move from the 1972 Interim Agreement "baseline" level of 740 SLBM launchers to the 950 level in 1975. They are expected to continue to produce new SSBNs, with offsetting reductions in other systems to remain within the stipulated ceiling.

The Soviet ballistic missile submarine force continues to grow in size and capability, a reflection of its high priority. As of Jan. 1, 1978, the Soviets had almost 900 SLBM launchers on SSBNs in operational status. There are additional launchers on SSBNs which are fitting out, on sea trials or under construction. There also are launchers on older diesel units which are not accountable under the SALT Interim Agreement.

The Soviets continue to maintain a relatively small portion of their SLBM force on operational patrol. However, the number of SLBMs within firing range of the United States on a day-to-day basis is increasing as additional DELTA units become operational. With their long-range missiles, these SLBM forces could strike the United States while still in Soviet ports.

The Soviets perceive the US POSEIDON/POLARIS missile submarine force to be the primary seaborne threat to their homeland. Countering that threat is a major mission of the Soviet Navy. To that end, coordinated antisubmarine warfare (ASW) is frequently a theme of Soviet naval exercises. In the near term, the technological superiority of U.S. nuclear submarines will frustrate Soviet detection efforts. However, in the long term, if Soviet proficiency at ASW continues to improve and their research program bears fruit, the threat to the U.S. ballistic missile submarine force may increase. This threat could be offset, however, by the increased ocean areas they will need to cover when the US TRIDENT system becomes operational.

It is estimated that the U.S.S.R. requires an average of 30-36 months to overhaul a nuclear submarine. This compares with 17 months for U.S. shipyards Considering their entire submarine force, the U.S.S.R. should overhaul about 20 units per year. This is a high shipyard workload and may explain in part why only about 15 per cent of the Soviet first line nuclear fleet, as compared to over 50 per cent for the United States, operates away from port at any given time. However, the Soviets are increasing and modernizing their repair and overhaul facilities.



POLARIS A-3	POSEIDON C-3	TRIDENT C-4		SS-N-5	SS-N-6 MOD 1	SS-N-6 MOD 2	SS-N-6 MOD 3	SS-N-8	SS-N-X 17	SS-N-X-18	
3 (MRV)	14 (MIRV)	(MIRV)	WARHEADS	1	1	1	2 (MRV)	1	1	3 MIRV	
1964	1971	1980	YEAR INITIAL OPERATIONAL CAPABILITY	1963	1968	1973	1973	1973			

Chart 3

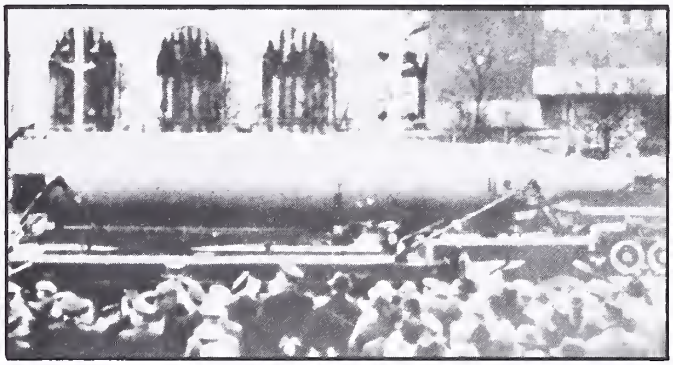
BALLISTIC MISSILE SUBMARINES

U.S.S.R. SLBMs

SS-N-5

The SS-N-5 first entered the Soviet submarine force in 1963. Although it has a relatively short range and a large circular error probable (CEP), it remains an effective weapon against soft targets because of its large warhead size. This missile is currently deployed in the GOLF II class diesel powered ballistic missile submarine (SSB), and the HOTEL II class SSBN.

SS-N-6



The SS-N-6 became operational in 1968 and is currently the most widely deployed Soviet submarine-launched ballistic missile system. It is carried by YANKEE class SSBNs. Three versions of the SS-N-6 missile are operational. One version has at least two and possibly three RVs, though not independently targetable.

SS-N-8

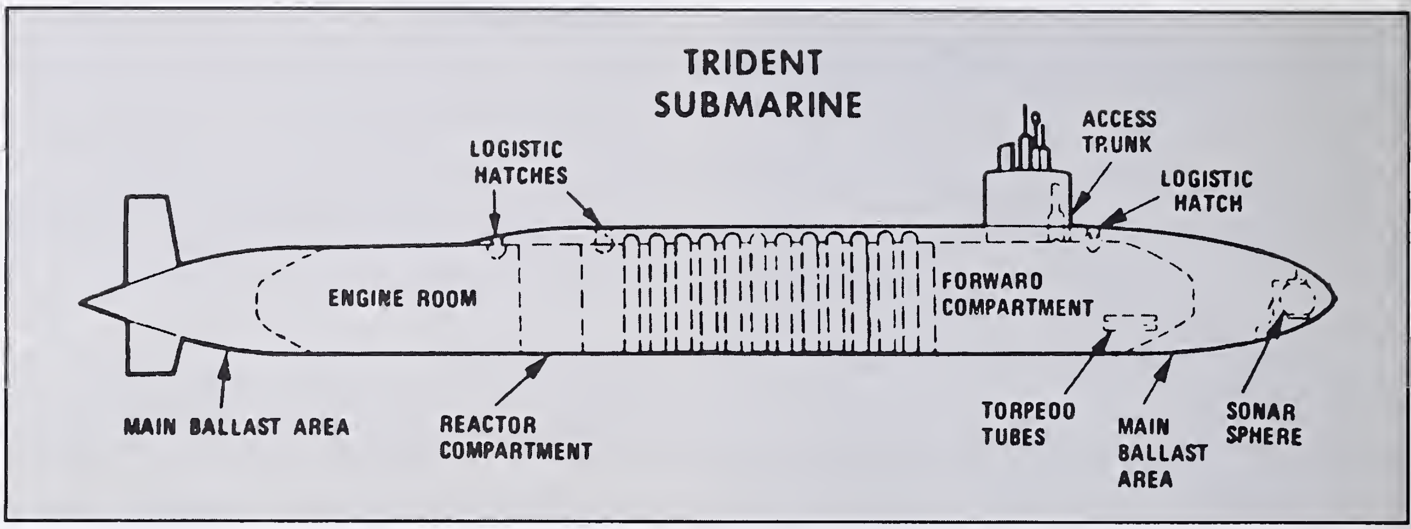
The SS-N-8 is a long-range ballistic missile carried predominantly by the 12-tube DELTA I and 16-tube DELTA II class SSBNs. This two-stage missile is capable of delivering a relatively large warhead and is the longest range SLBM currently operational in the world.

SS-NX-17

The SS-NX-17 began flight testing in 1975. The SS-NX-17 is the Soviet Union's first solid propellant SLBM and is the first to use a PBV for deployment of RVs, which suggests a MIRV capability.

SS-NX-18

The SS-NX-18, the Soviet's second SLBM with a PBV, was first fired from an at-sea platform in November 1976. This missile is similar to the SS-N-8 but it is larger, has a MIRV capability, and a more sophisticated guidance system. It is estimated that the SS-NX-18 can deliver three MIRVs.



FUTURE SLBMs

It is expected that the Soviets will continue to develop and improve their SLBM force to give it greater throw-weight capability and improved accuracy. The Soviets could develop and deploy a follow-on to the SS-N-8 or the SS-N-6 during the early 1980s.

U.S. SLBMs

POLARIS/POSEIDON

Since the initial deployment of the POLARIS A-1 SLBM in 1960, both the submarines and missiles have achieved improved operational capability and flexibility. In the Pacific, SSBNs are deployed with the POLARIS A-3 missile.

TRIDENT

Looking ahead, the TRIDENT system will replace the POLARIS/POSEIDON systems as they reach the end of their useful life. The current 31-ship POSEIDON force entered service in the five year period from 1963 to 1967. The POSEIDON force is planned to have a maximum extended service life of 25 years. Under such a condition, a significant reduction in SLBMs will occur in the late 1980s and early 1990s since the POLARIS/POSEIDON force was built at a much faster rate than that planned for TRIDENT.

The TRIDENT II missile, with its extended range, will permit SSBN basing in the United States without sacrificing alert rates, and will greatly increase the SSBN operating area. This increase will maintain the excellent survivability of the sea-based strategic deterrent by complicating the Soviet antisubmarine warfare (ASW) problem.

The TRIDENT I missile, now in production after a successful flight test program, has been sized to be compatible with POSEIDON SSBNs and will have missile accuracy at 7,500 km comparable to the current POSEIDON missile accuracy at half that range. Backfit of this missile into 12 POSEIDON submarines will commence in 1979. Deployment of the TRIDENT I missile into both the Atlantic and Pacific presents adversaries with a two-ocean ASW problem and increases U.S. targeting flexibility and effectiveness.

This year's budget request seeks to continue the SLBM Improved Accuracy Program to provide a technology base for decisions on the TRIDENT II missile. Concept formulation for the TRIDENT II missile began in FY 1978; Initial Operational Capability (IOC) is expected in the 1980s.

MARK 500 RV

The continuation of advanced development of the Mark 500 EVADER maneuvering reentry vehicle is also proposed. The EVADER is designed to improve SLBM penetration of potential ballistic missile defenses and its development will serve as both a deterrent and a hedge against Soviet improvements to their antiballistic missile defenses. Compatibility with the TRIDENT I missile has been demonstrated during the missile flight test program.

U.S.S.R. Ballistic Missile Submarines

GOLF CLASS

GOLF class diesel powered submarines, the first Soviet submarines specifically designed to carry ballistic missiles, reached operational status in 1958. Most of these units almost certainly have been assigned missions against targets on the Soviet periphery.

HOTEL CLASS

The first of eight HOTEL I class SSBNs was launched in 1959 and carried SS-N-4s. Most of these units were converted to carry the SS-N-5 and were designated HOTEL II.

YANKEE CLASS

The YANKEE class SSBN, when introduced into the Soviet fleet in late 1967, represented a significant advance in Soviet sea-based strategic capability. Between 1966 and 1974, 34 YANKEEs were produced, which constitute the largest component of the Soviet strategic SSBN fleet. Thirty-three units are armed with 16 SLBMs of the SS-N-6 family; one carries SS-NX-17 missiles.

DELTA I AND II CLASSES

Construction of the 12-tube DELTA I is believed to have ended. The DELTA I and DELTA II are armed with the SS-N-8 missile. The long range and accuracy potential of this missile system, combined with the operating capabilities of DELTA I and DELTA II SSBNs, make this weapon system the greatest SLBM threat to the United States. These platforms are within missile range of most U.S. targets from their home ports.

U.S. Ballistic Missile Submarines

POLARIS/POSEIDON

The U.S. SSBN force currently consists of five classes of submarines. The oldest two classes consist of a total of 10 POLARIS submarines with the POLARIS A-3 missile. These 10 submarines deploy from Guam and comprise our Pacific seabased strategic force. The other three classes (31 submarines) have been modified to carry the POSEIDON missile.

POSEIDON submarines deploy from Charleston, S.C.; Holy Loch, Scotland; and Rota, Spain. Relocation of the Rota-based squadron to the United States is planned during 1979. The planned conversion of 12 POSEIDON missile submarines to the longer range TRIDENT I system will permit U.S. basing with no degradation of overall force alert rate.

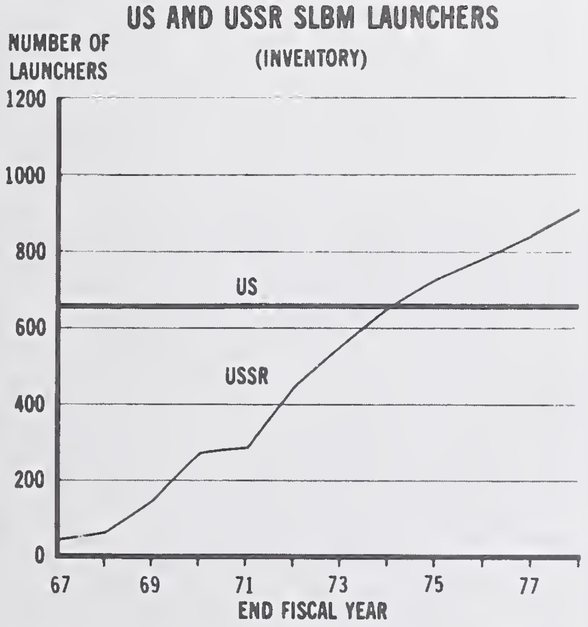
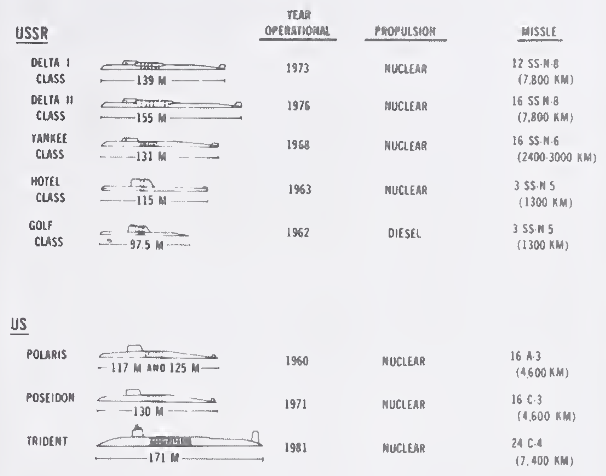


Chart 5



USSR		YEAR OPERATIONAL	PROPULSION	MISSLE
DELTA I CLASS	139 M	1973	NUCLEAR	12 SS-N-8 (7,800 KM)
DELTA II CLASS	155 M	1976	NUCLEAR	16 SS-N-8 (7,800 KM)
YANKEE CLASS	131 M	1968	NUCLEAR	16 SS-N-6 (2400-3000 KM)
HOTEL CLASS	115 M	1963	NUCLEAR	3 SS-N 5 (1300 KM)
GOLF CLASS	97.5 M	1962	DIESEL	3 SS-N 5 (1300 KM)
US				
POLARIS	117 M AND 125 M	1960	NUCLEAR	16 A-3 (4,600 KM)
POSEIDON	130 M	1971	NUCLEAR	16 C-3 (4,600 KM)
TRIDENT	171 M	1981	NUCLEAR	24 C-4 (7,400 KM)

Chart 4

TRIDENT

The TRIDENT submarines, each capable of carrying 24 MIRV missiles, will achieve Initial Operational Capability in 1981. The survivability and high system effectiveness of TRIDENT will contribute to a strong sea-based deterrent in the mid-1980s and beyond. The TRIDENT is quieter than POSEIDON, faster, capable of sustaining a higher at-sea rate and armed with longer range missiles which increase the submarine operating area. Furthermore, the TRIDENT launch tubes have been designed with growth potential to accommodate the larger TRIDENT II, as a follow-on to the TRIDENT I missile.

Bomber Forces

ARMS LIMITATION CONSIDERATIONS

It was agreed at Vladivostok that "heavy bombers" would be included in the 2,400 aggregate limitation of strategic nuclear delivery vehicles. The questions of which and how many heavy bombers to include under the 2,400 limit remain unresolved. The Soviets maintain that of their aircraft only the TU-95 (BEAR) and Myasishchev (BISON) aircraft actually configured and intended for use in a heavy bomber role are subject to the limitation. The United States contends that all heavy bomber type aircraft must be subject to the 2,400 limit.

The Joint Chiefs of Staff have recommended counting the Soviet BACKFIRE in the aggregate since it has characteristics and capabilities similar or superior to those aircraft which both sides agree are heavy bombers. While estimates of maximum range differ, the BACKFIRE can deliver ordnance on the United States and recover in third countries without refueling. In wartime the Soviets could employ the BACKFIRE against the United States.

Chart 6 provides drawings of U.S. and U.S.S.R. bombers currently deployed. Chart 9 shows latest estimates of the respective long-range bomber forces through the end of FY 1978. Bombers assigned to Soviet Naval Aviation (SNA) forces are not included on this chart.

U.S.S.R. Bombers

For a number of years the Soviet Strategic Long-Range Aviation (LRA) bombers have included the four-engine turboprop BEAR and the four-engine jet BISON. The current strike force has about 140 BEAR and BISON.

The Soviets have more than 40 BISON that are now configured as tankers which could be reconfigured as bombers. The BISON tankers refuel both the BEAR and BISON, and could refuel the BACKFIRE. The Soviets may develop a new tanker based on the IL-76/CANDID jet transport, and could convert the remaining BISON bombers to tankers.

The BACKFIRE is the only Soviet bomber currently being produced and deployed to their LRA and Soviet Naval Aviation forces. More than 100 BACKFIRE have probably been produced. The BACKFIRE is a versatile, multi-purpose aircraft capable of performing nuclear strike, conventional attack, antiship, reconnaisance, and electronic warfare missions. Although BACKFIRE clearly has extensive capabilities for various types of peripheral land and sea missions, its intercontinental capabilities cannot be prudently ignored.

The Soviets may be in the process of developing a new long-range bomber to replace the BEAR and BISON. Since 1974, Soviet officials have on several occasions referred to such developments. If such a program is under way, this new bomber could appear in the early 1980s.

U.S.S.R. Air-to-Surface Missiles

The AS-3/KANGAROO air-to-surface missile carried by some BEAR variants can deliver a nuclear warhead up to 350 nautical miles. The AS-4/KITCHEN air-to-surface missiles identified with BACKFIRE can also deliver a nuclear warhead.

U.S. Bombers

The U.S. manned bomber will play an important role in deterrence into the foreseeable future. Currently, approximately 30 per cent of the bomber force is maintained on strategic alert. Fully generated, the bomber force carries approximately one-third of all deliverable U.S. strategic nuclear weapons and half the total megatonnage.

The B-52 is the major aircraft component of the U.S. strategic inventory. Of the 742 produced between 1954 and 1964, 349 remain in the active force. Although the average age of the active B-52 force is over 19 years, modification efforts are under way to update these aircraft. Of the 76 FB-111A aircraft delivered between 1968 and 1971, 66 remain in the active inventory. The B-52 and FB-111 will continue to constitute the US intercontinental bomber force while the challenge of future modernization is pursued.

For strategic forces, air refueling enables the long, low-level flight profiles necessary to penetrate the Soviet air defense system. Air refueling is also essential to timely deployment and effective employment of tactical air forces.

While the total tanker force is declining slightly, tactical air force and airlift force contingency plans which require the use of air refueling are increasing. The rising requirements for air refueling for aircraft other than strategic bombers has led to the growing probability that in a time of major crisis, strategic nuclear forces and early-deploying general purpose forces will compete for tanker support. The tanker force must be modernized to support current and future U.S. air refueling requirements. Improved engines for the KC-135 and development of the Advanced Tanker/Cargo Aircraft (ATCA) will add to these capabilities, reduce the critical refueling constraint, and increase flexibility as refueling requirements grow in the future.

Bomber modernization will continue. Current programs include upgrading and extending the useful

STATIC COMPARISON OF US AND USSR BOMBERS

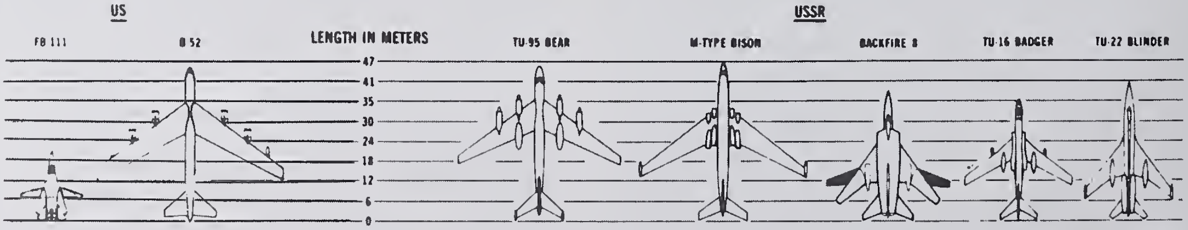


Chart 6

life of the various B-52 models, and modernization of offensive avionics. The defensive capabilities of the B-52 and FB-111 aircraft will be updated and a broader range of nuclear and conventional weapons will be developed.

U.S. Air-to-Surface Missiles

The Short-Range Attack Missile (SRAM) is a supersonic nuclear weapon presently deployed with the strategic bomber force. The SRAM can penetrate any known or projected Soviet defense to destroy high value targets or suppress sophisticated terminal defenses. The flexibility inherent in the SRAM also makes it an efficient weapon for use in limited nuclear options.

U.S.S.R. Cruise Missiles

To date, the Soviets have concentrated on the development of tactical, theater-oriented cruise missiles with ranges less than 850 km. The asymmetries in geography and population distribution of the U.S. and U.S.S.R. are probably the driving reasons for the lack of current Soviet activity in developing a strategic type of cruise missile system. The Soviet requirement for a long-range cruise missile is minimal; 55 important U.S. cities with some 71 million people are within 850 km of the 100 fathoms depth curve in the Atlantic and Pacific Oceans. Conversely, only six of the major cities in the Soviet Union, with some 2.2 million people, are located within a similar 850 km distance.

A number of different Soviet cruise missile systems (primarily antiship) have been deployed. R&D is continuing on several new systems.

Although there is great uncertainty in regard to Soviet intent to develop a strategic cruise missile, there is no doubt about their capability to do so.

Cruise Missiles

The Air Force is currently planning a competitive flyoff program to identify the best air-launched cruise missile (ALCM) candidate for future deployment. This program is planned to support a limited operational capability in 1980 with an initial Operational Capability in 1981. Cruise missile applications include delivery from carefully selected launch points inside and outside the Soviet defensive perimeter to take advantage of the long range and accuracy projected for this weapon. Some B-52s and the FB-111s will penetrate to targets using SRAM and gravity weapons, while other B-52s will launch cruise missiles.

Initially, cruise missiles will be deployed on current bomber aircraft (B-52Gs). Additional options to employ other aircraft as cruise missile carriers are under study. The ALCM will complicate the enemy's defensive problem and thus enhance bomber penetration. ALCM program development provides for subsonic flight at low altitude at a range of 2,500 km. Powered by a small turbofan engine, the missile will incorporate an inertial guidance system updated by Terrain Correlation Matching.

Various methods of treating cruise missiles in SALT are currently under consideration. U.S. cruise missile development programs are going forward, structured so that missile characteristics can be adjusted to meet the provisions of further SALT agreements.

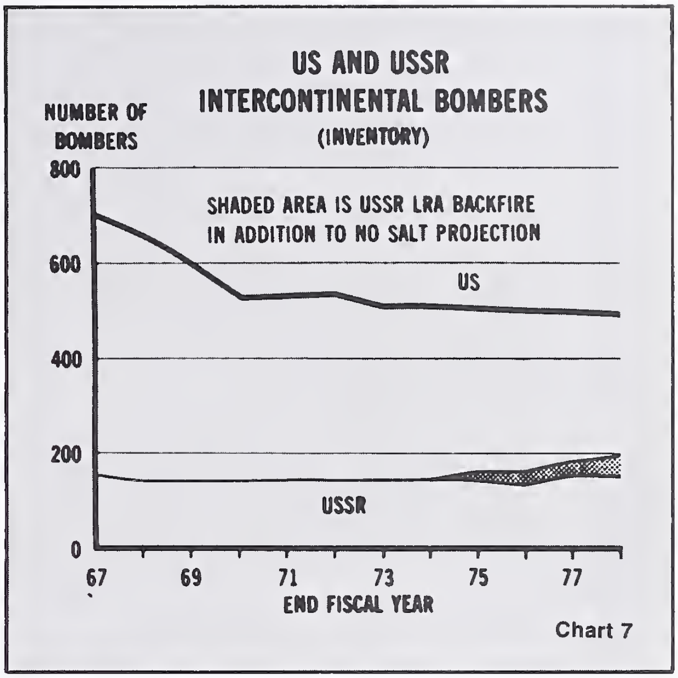


Chart 7

Other Operational Offensive Factors

In addition to factors already discussed, other indicators of nuclear strength contribute to an analysis of relative strategic capabilities. The following charts show the growing strategic nuclear operational capabilities of the Soviet Union.

These charts do not include ICBM launchers under construction or conversion, or submarines in conversion, overhaul or awaiting missiles. Only unit equipment bombers are counted.

Chart 8, Operational Strategic Offensive Delivery Vehicles, points out the emphasis the U.S.S.R. has placed on strategic offensive programs and their relationship to U.S. programs.

Chart 9 depicts the number of strategic warheads and bombs fitted on operational weapon systems or carried by the delivery vehicles. The U.S. advantage in this measure is being rapidly diminished.

U.S./U.S.S.R. Strategic Defensive Forces

Overview

The strategic equation is ordinarily thought of in terms of "offensive" and "defensive" forces. Either type force can threaten or contribute to strategic stability. A modest increase in offensive capability might require massive investment in defenses. The opposite could also be true. Passive defense measures such as dispersal and population sheltering add yet another factor to the equation. If by passive defenses one side has reduced the effects of retaliation to an acceptable level, then deterrence has been substantially reduced. Extreme asymmetries in strategic defensive capabilities can therefore create an unstable situation.

Antiballistic Missile Forces

ARMS LIMITATION CONSIDERATIONS

The Antiballistic Missile (ABM) Treaty of 1972 originally limited each side to two ABM sites, one site centered on the national capital and the other on an ICBM launch area. Each site could contain no more than 100 ABM interceptor missiles at launch positions. There were specific restrictions on the radars which could be employed at the sites. The Treaty also prohibited the parties from developing, testing, or deploying ABM systems or components which were sea-based, air-based, space-based or mobile land-based. In addition, the parties agreed not to develop, test, or deploy ABM launchers capable of launching more than one interceptor missile at a time; ABM systems that would provide a rapid reload capability; and interceptor missiles with more than one independently guided warhead.

On July 3, 1974, a Protocol of the ABM Treaty was signed in Moscow. The Protocol, which was ratified on Nov.10, 1975, further limits the parties to only one ABM deployment site. Each party, however, is permitted to relocate its ABM site once, provided that advance notice of the change is given during a year when the ABM Treaty is scheduled for review. The ABM Treaty is reviewed every five years; the first review was held in the Fall of 1977. In September, the U.S. and U.S.S.R. jointly stated a belief that the treaty serves the security interests of both countries and reaffirmed their commitment to the Treaty.

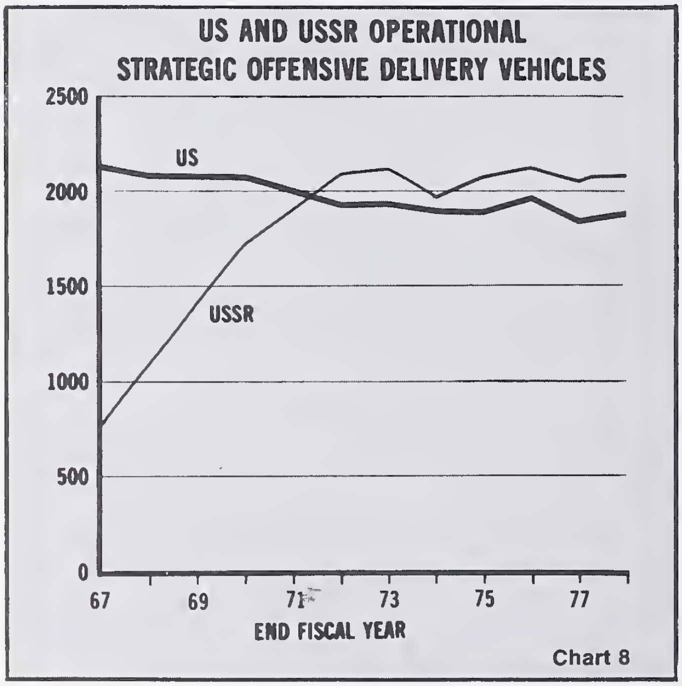


Chart 8

U.S.S.R. BALLISTIC MISSILE DEFENSE

Operational Soviet ABM defenses include HEN HOUSE early warning radars, DOG HOUSE and CAT HOUSE battle management radars near Moscow, TRY ADD engagement radars and the ABM-1B/GALOSH interceptor missiles at four launch complexes also near Moscow. Each of the four complexes contains 16 launchers. There is no evidence that the Soviets intend to increase the 64 launchers to the 100 permitted under the agreement.

The present Soviet ABM system could provide adequate protection of the Moscow area against small attacks using unsophisticated missiles without penetration aids.

Although ABM launcher levels have remained static for the past few years, the Soviets have continued to upgrade both their ballistic missile early warning (BMEW) and battle management radar capabilities. Their HEN HOUSE BMEW network has been expanded.

The U.S.S.R. continues R&D efforts on components for a new ABM system.

U.S. BALLISTIC MISSILE DEFENSE

Operationally, the U.S. Ballistic Missile Defense (BMD) program is now dormant. The HARDSITE and Site Defense programs are now oriented toward solution of technology problems. SAFEGUARD, the free world's only BMD system, has been terminated, and the site in North Dakota inactivated. The single remaining functional element of SAFEGUARD, the Perimeter Acquisition Radar Attack Characterization System, was transferred to the Air Force on Oct. 1 to perform attack characterization functions for the Aerospace Defense Command.

Air Defense

Overview

Charts 10 and 11 display the numerical imbalance in the U.S. and Soviet interceptor and missile defense force structures.

U.S.S.R. AIR DEFENSE

The Soviet Union's strategic air defense is by far the most extensive in the world: more than 6,000 radars located at early warning and ground control intercept radar sites; about 2,600 fighter interceptors; and more than 12,000 strategic SAMs.

Many Soviet air defense systems were originally designed and deployed to counter the medium-to-high altitude bomber and stand-off missile threats of the late 1950s and early 1960s. Their effectiveness against low altitude tactics and the SRAM which the U.S. Strategic Air Command employs today is less than their sheer numbers would suggest.

U.S. AIR DEFENSE

The North American air defense system is considerably smaller than that of the U.S.S.R. The limited U.S. air defense force is tasked to defend important areas worldwide, including areas of the continental United States and air and sea lines of communication. This force provides the United States with the capability to perform peacetime surveillance and control of U.S. airspace using dedicated strategic defensive forces augmented by general purpose forces.

The current U.S. posture does not protect against a massive bomber attack. Rather, it seeks to preclude an aggressor from having unchallenged access to the air space over the United States. Plans call for augmentation forces to be made available at a time of increased readiness or declaration of hostilities. They would include forces from the Air Force Tactical Air Command, and from Army, Navy and Marine forces which have primary missions other than strategic air defense. Air National Guard interceptor squadrons, which provide a portion of the peacetime alert, would be fully mobilized in time of crisis.

Surveillance and Command and Control

U.S.S.R. SURVEILLANCE AND COMMAND AND CONTROL

MOSS-type aircraft provide the U.S.S.R. with its limited airborne controlled intercept capability. The MOSS has worked in overwater exercises, but is unequal to the more challenging overland task. If the U.S.S.R. intends to improve its air defense, a new airborne intercept warning and control aircraft system,

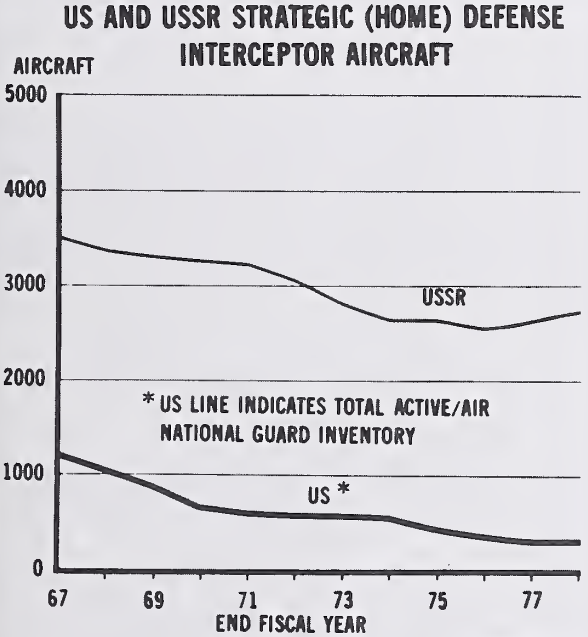


Chart 10

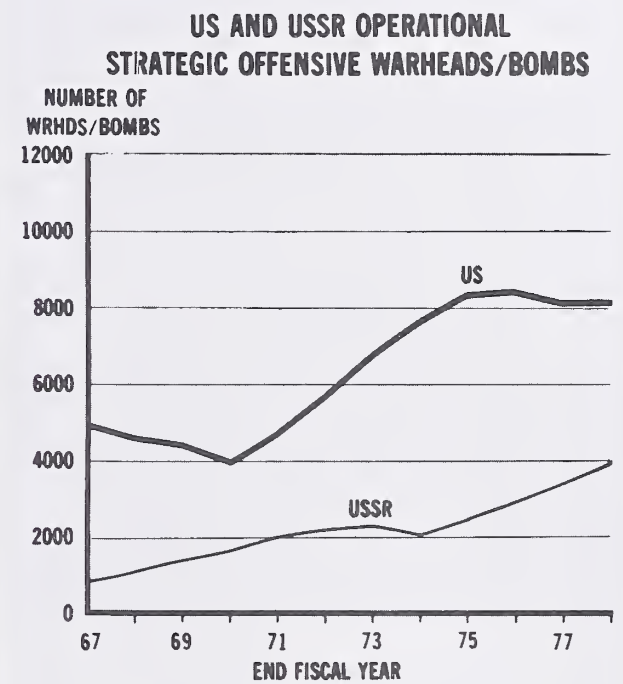


Chart 9

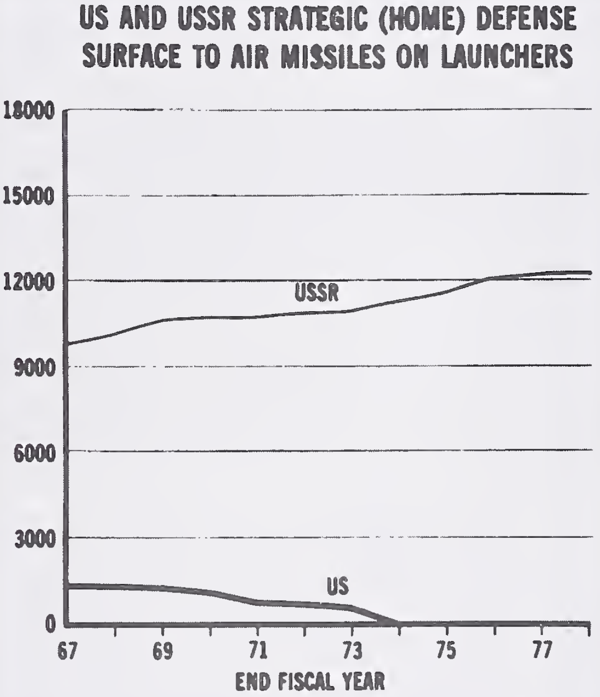


Chart 11

a better radar network for ground controlled intercept (GCI), and better airborne radars will be required. Deployment of new control systems will make significant improvements in Soviet low altitude defense.

U.S. SURVEILLANCE AND COMMAND AND CONTROL

The U.S. aircraft early warning and surveillance radar system was deployed during the late 1950s and early 1960s. Since then, this system has been steadily reduced. Regional control centers and a network of USAF and Federal Aviation Administration radars, which currently provide U.S. surveillance, are seriously deficient in low-altitude and long-range detection. Interceptors based at 26 alert locations provide peacetime airspace sovereignty and control around the periphery of the continental United States. Because the peacetime air sovereignty mission deployment is less than optimum for wartime, redeployment plans exist to enable the interceptor force to meet the threat more effectively. The present surveillance system overall suffers from high operating costs, wartime vulnerability, and severe coverage deficiencies. Modernization of strategic air defense forces in the light of the increasing Soviet bomber threat is an important requirement.

Some modernization of the surveillance and control system is underway. The U.S. is bringing into service the E-3A Airborne Warning and Control System (AWACS). If sufficient AWACS aircraft are made available for CONUS air defense, vulnerabilities of the ground control centers will be offset and target acquisition and interceptor control will be greatly improved. Enhancement of the present distant early warning (DEW) line for northern warning of bomber attack is under study. The most promising approach calls for the installation of low cost, gap-filling radars to establish continuous all-altitude coverage by the mid-1980s. The development of over-the-horizon BACK-SCATTER radar (OTH-B) could also provide long-range bomber warning seaward during the same time frame. A new air defense interceptor, which could be deployed in the early 1980s, would enable the full potential of this modern air defense system to be realized.

Interceptors

OVERVIEW

Chart 12 provides a comparison of Soviet and U.S. interceptors.

U.S.S.R. INTERCEPTORS

The Soviets have accelerated their air defense interceptor force modernization program. The force currently consists of approximately 2,600 aircraft. Deliveries of new MIG-23 FLOGGER-B and MIG-25 FOXBAT-A together with redeployment of many of the aircraft replaced by these interceptors have reversed 18 years of inventory decline, possibly precipitated by the less than complete success of Soviet-supplied surface-to-air missile defenses in the Vietnam and Middle East conflicts. In addition, the Soviets are adopting new short-range, visually aimed weapons as secondary armament on many of their deployed interceptors. These weapons should enhance the capability of Soviet forces to deal with hostile aircraft which employ evasive tactics or electronic countermeasures.

The present Soviet force consists of pre-1964 aircraft (MIG-17 FRESCO D, MIG-19 FARMER B/E, and SU-9 FISHPOT B) and newer generation fighters (YAK-28P FIREBAR, SU-11 FISHPOT C, TU-128 FIDDLER, SU-15 FLAGON A/D/E/F, MIG-25 FOXBAT A, and MIG-23 FLOGGER B). Hardened aircraft bunkers at air defense fields provide shelter for a significant portion of the force; this program is continuing.

The Soviets are currently attempting to develop a follow-on interceptor which can detect, track, and shoot down a penetrator at a lower altitude, unlike conventional airborne intercept radar and missile guidance systems which are affected by ground clutter. This system contrasts with the rudimentary system currently deployed in the FLOGGER B, the first Soviet aircraft with a demonstrated ability to track and engage targets flying below its own altitude.

U.S. INTERCEPTORS

The F-106 DELTA DART is the mainstay of the U.S. dedicated air defense interceptor force. This aircraft, originally deployed in the early 1960s, has been continuously updated, but is nearing the end of its long service life. At present, approximately half of the force is allocated to Air National Guard (ANG) squadrons, and half to regular active squadrons. One ANG F-106 squadron is scheduled to convert to F-4s in FY 1978 so that its assets can be redistributed to other F-106 squadrons to maintain their capabilities.

F-101 VOODOOs of the same vintage as the F-106 are assigned to three ANG squadrons. An F-101 squadron converted to F-4s in FY 1977.

The F-4 PHANTOM II is the primary general purpose fighter used to augment the dedicated interceptor force and will be replaced by the more advanced F-15 EAGLE as it becomes available. Up to 160 additional aircraft from Air Force, Navy and Marine Corps general purpose forces are earmarked to serve as interceptors in times of crisis, and offer a limited augmentation capability for that purpose.

Strategic Surface-to-Air-Missiles (SAM)

U.S.S.R. SAMs

The Soviet Strategic Defense Missile Force is composed of the SA-1 (GUILD), the SA-2 (GUIDELINE), the SA-3 (GOA), the SA-5 (GAMMON), and the ABM-1 (GALOSH).

Soviet strategic SAM forces have steadily expanded and improved. While active SA-2 sites have declined in number, this has been largely offset by the deployment of additional SA-3 low-altitude and SA-5 high-altitude sites.

STATIC COMPARISON OF US AND NEWEST USSR INTERCEPTORS

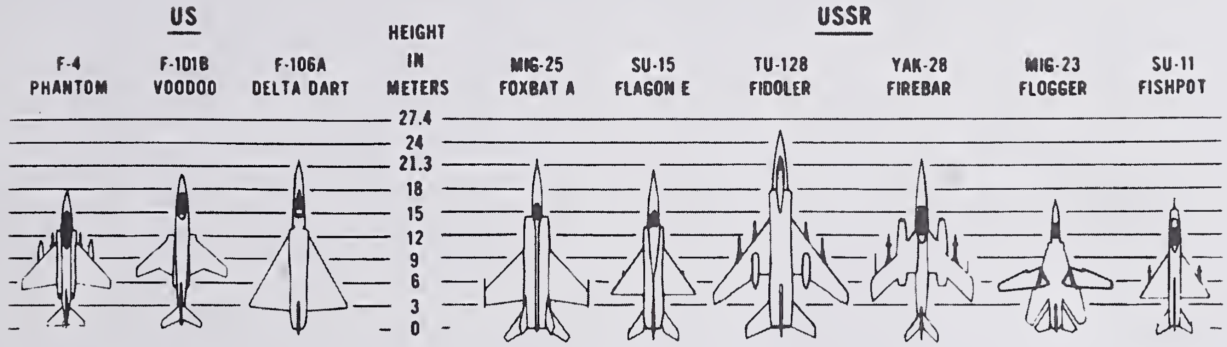


Chart 12

U.S. SAMs

The last of the U.S. strategic SAM forces was inactivated in 1974. However, because of the proximity of Cuba, one HERCULES and two HAWK battalions, all general purpose, were retained in a strategic air defense role in southern Florida. Additionally, because of its proximity to the U.S.S.R., one general purpose HERCULES battalion was retained in the Anchorage area.

Civil Defense

U.S.S.R. CIVIL DEFENSE

The Soviet union includes civil defense as an integral part of its overall military strategy. Their rationale asserts that credible civil defense contributes to deterrence, strategic stability, and the ability of the state to survive. Civil defense in the U.S.S.R. is a military controlled nationwide program focused primarily on protection of people (the leadership, essential personnel, and the general population, in that order); continuity of economic activity in wartime; and recovery from the effects of a nuclear attack. While it is not a crash effort, the pace of the program has substantially increased since the late 1960s. The principal achievement has been the construction of blast shelters designed to protect all levels of leadership and essential personnel in a labor force. Industrial protection has concentrated on construction of these blast shelters and implemented selected machinery protection measures at a wide variety of industrial facilities. It is estimated that hardened shelters currently exist for a minimum of 10–20 per cent of the general urban population. There is little doubt about the extensive nature of the Soviet civil defense system.

U.S. CIVIL DEFENSE

United States concern for the Soviet program is based on the actual and perceptual role of civil defense in strategic stability and deterrence. Should the Soviets believe their civil defense program makes nuclear war a reasonable option, then the strategic nuclear balance and deterrence could be upset.

U.S. policy has tended to rely on mutual vulnerability as the key to deterrence. U.S. civil defense has been accorded a low priority and does not maintain an effective capability. A reassessment of this view is required, along with an examination of what a larger program could and could not accomplish.

U.S. civil defense programs currently seek to develop the capability to relocate citizens from potential target areas and metropolitan areas to areas of lower risk. Civil defense programs also seek to provide fallout protection for people near places of work or residence.

In the broadest sense, a strong and effective civil defense program would complement and support a U.S. military effort in nuclear war by enhancing the survivability of the population and the industrial capacity of the United States, upon which the Nation's defense effort depends.

Military Space Activities

Overview

The Soviet Union has continued to pursue extensive research and development and a renewed testing effort in space warfare. In terms of space weapon capability, they are ahead—and are likely to continue in the lead for the next several years.

Satellite Interceptors

U.S.S.R. SATELLITES

The Soviets conducted four antisatellite tests in 1977. The satellite intercept capability demonstrated during the Soviet test complicates the U.S. task of space identification, attack assessment and warning of hostile space events.

U.S. SATELLITES

The major concern of U.S. satellite defense is to insure that effective command, control and communications systems are available so that strategic forces can be employed as required. A capability is needed to detect attacks on U.S. satellites and to warn national authorities on a timely basis of any Soviet attempts to gain military advantage in space.

The President has proposed development of an agreement with the Soviet Union whereby both countries might forgo the capability of destroying satellite vehicles. The ability to verify compliance with such an agreement would be of primary importance to the United States. U.S. research and development programs to reduce relative vulnerability are planned to continue while the negotiations proceed.

Reconnaissance and Warning Systems

U.S.S.R. RECONNAISSANCE

The Soviet reconnaissance effort consists of airborne, naval, ground-based, and space collectors, which can be integrated to provide information on U.S. operations. Although the Soviet information requirements are similar to those of the United States, the openness of the U.S. society makes the Soviet collection task markedly easier. The Soviet reconnaissance program is tailored to fill information gaps and to meet specific operational requirements.

The Soviets employ a variety of reconnaissance aircraft targeted primarily against central Europe, the Sino-Soviet border and selected allied naval activities. These reconnaissance aircraft are operated by Long Range Aviation, Naval Aviation, Frontal Aviation, and Military Transport Aviation units. The majority of Soviet reconnaissance missions are flown from bases in the U.S.S.R., with some missions conducted from Cuba, Guinea, and Angola. As required, aircraft are sent to the bases outside the U.S.S.R. to accomplish specific reconnaissance tasks. Soviet sea-based reconnaissance is performed by auxiliary ships specially designed and fitted as intelligence collectors, by warships, and by merchant ships for certain limited collection tasks. The principal mission of sea-based reconnaissance is visual, electronic, and acoustic surveillance of U.S. forces and bases. In this regard, particular emphasis is placed on the U.S. submarine ballistic missile force, carrier strike force and Strategic Air Command operating locations overseas. They also monitor space and missile R&D activity, coastal signals and specific events of interest.

U.S. WARNING SYSTEMS

The primary U.S. systems for warning of ICBM and SLBM launches remain the early warning satellites and the Ballistic Missile Early Warning System (BMEWS). These are complemented by the SLBM detection and warning system and the primary acquisition Radar Attack Characterization System (PARCS). Tactical warning and attack characterization of ICBM and SLBM attacks are necessary to maximize the survivability of strategic forces and the time available for the National Command Authorities' (NCA) decisions and actions. Planned improvements to PARCS will improve discernment of the nature of an attack. Improved SLBM phased-array radars are being procured to replace obsolete SLBM detection and warning systems. The lack of a ballistic missile defense makes surveillance and attack warning even more essential to the NCA decision-making process. The Missile Surveillance Technology Program is working toward enhanced missile surveillance systems in the 1980s.

The warning and characterization task of the U.S. BMEWS is being complicated by Soviet ICBM improvements, existing MIRVs and other technological developments. Additional data must be collected and analyzed within current time constraints to determine the character of an offensive Soviet missile launch. Upgrading and improvements to the BMEWS are planned to provide improved object counts, missile impact prediction, and attack assessment.

PRC Strategic Forces

Overview

The Chinese now have a limited but credible capability for nuclear strikes by missiles around the periphery of the People's Republic of China. Their capacity to produce fissionable materials is expanding. At present, the Chinese have no deployed missile capable of attacking the continental United States and are not projected to deploy such a system for several years.

During 1977, Chinese surface-to-surface missile and related programs have apparently expanded. In addition, there have been nuclear weapon tests. This activity suggests a continuing emphasis by the Chinese on developing strategic missile and space systems.

The People's Republic of China has made a substantial investment in research, developmental testing, and production facilities for both liquid and solid propellant missile systems. Although the Chinese have not yet flight tested a solid propellant ballistic missile, they continue to expand their solid propellant rocket motor facilities. They will probably develop solid propellant ballistic missile systems.

PRC Land-Based Strategic Ballistic Missiles

CSS-1

The CSS-1 MRBM can reach targets in the Eastern U.S.S.R., peripheral nations, and some U.S. bases in the Far East. The deployed force, has not increased significantly since 1972.

CSS-2

CSS-2 IRBM missiles are currently deployed in China and the number is expected to remain the same. As currently deployed, CSS-2 missiles can reach targets in Central and Eastern Asia.

CSS-3

The CSS-3, a limited-range ICBM system was flight-tested in 1976. While the PRC has not abandoned the CSS-3 program, only limited numbers will probably be deployed. This missile gives the PRC a limited capability to cover targets in Asia, parts of the European U.S.S.R., the Marianas, Alaska, Australia, and portions of the Middle East, but not the continental United States.

CSS-X-4

The CSS-X-4 is the PRC's only ICBM with a potential to hit continental U.S. targets. It is in the same class as the U.S. TITAN II and the Soviet SS-9.

Full flight testing of this missile will require launches to an open ocean impact area, probably in the Pacific. Analysis of such launches will provide much more data about characteristics of the system. The PRC could have a small number of CSS-X-4s deployed in silos by the early 1980s.

PRC SLBMs

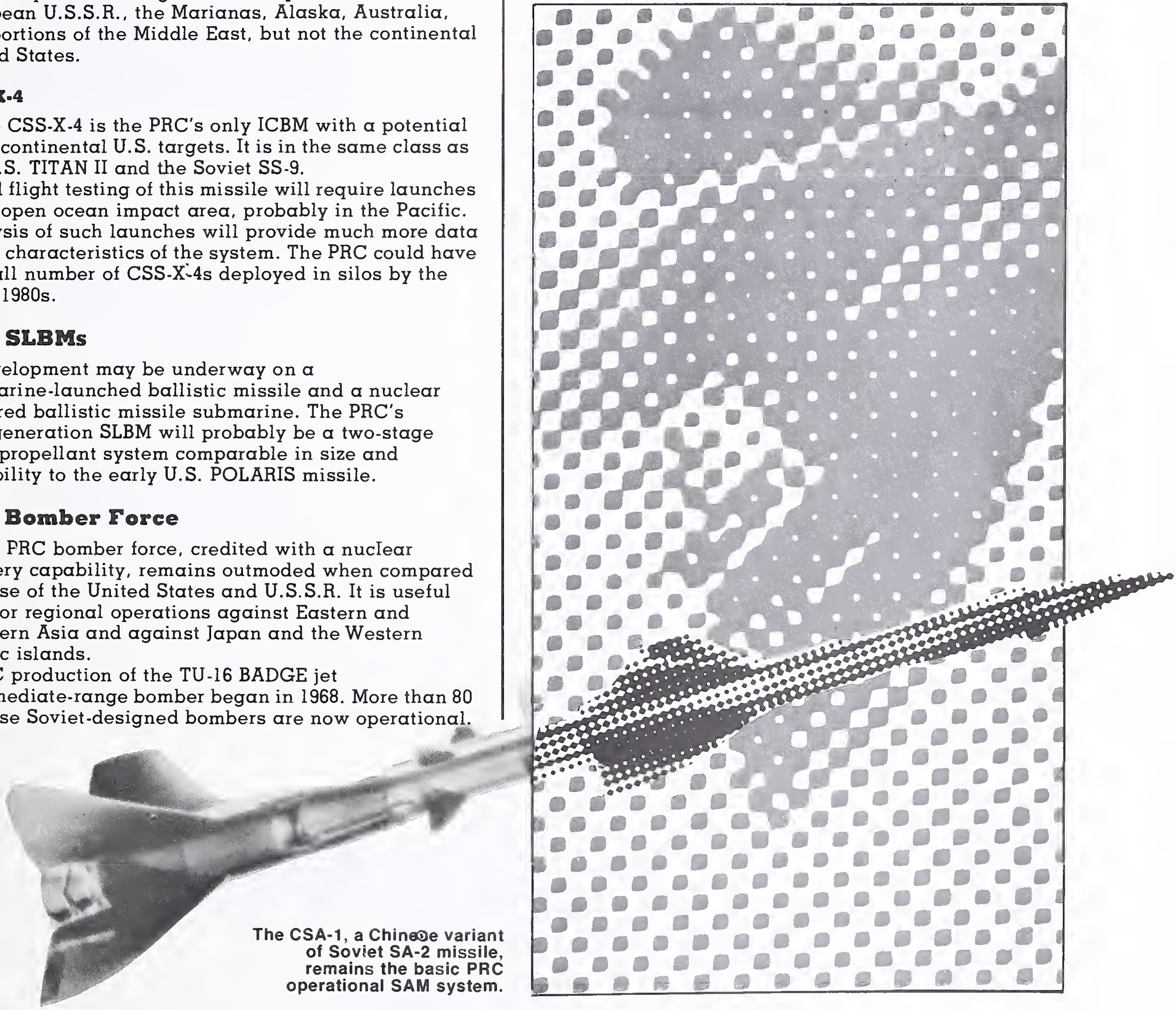
Development may be underway on a submarine-launched ballistic missile and a nuclear powered ballistic missile submarine. The PRC's first-generation SLBM will probably be a two-stage solid propellant system comparable in size and capability to the early U.S. POLARIS missile.

PRC Bomber Force

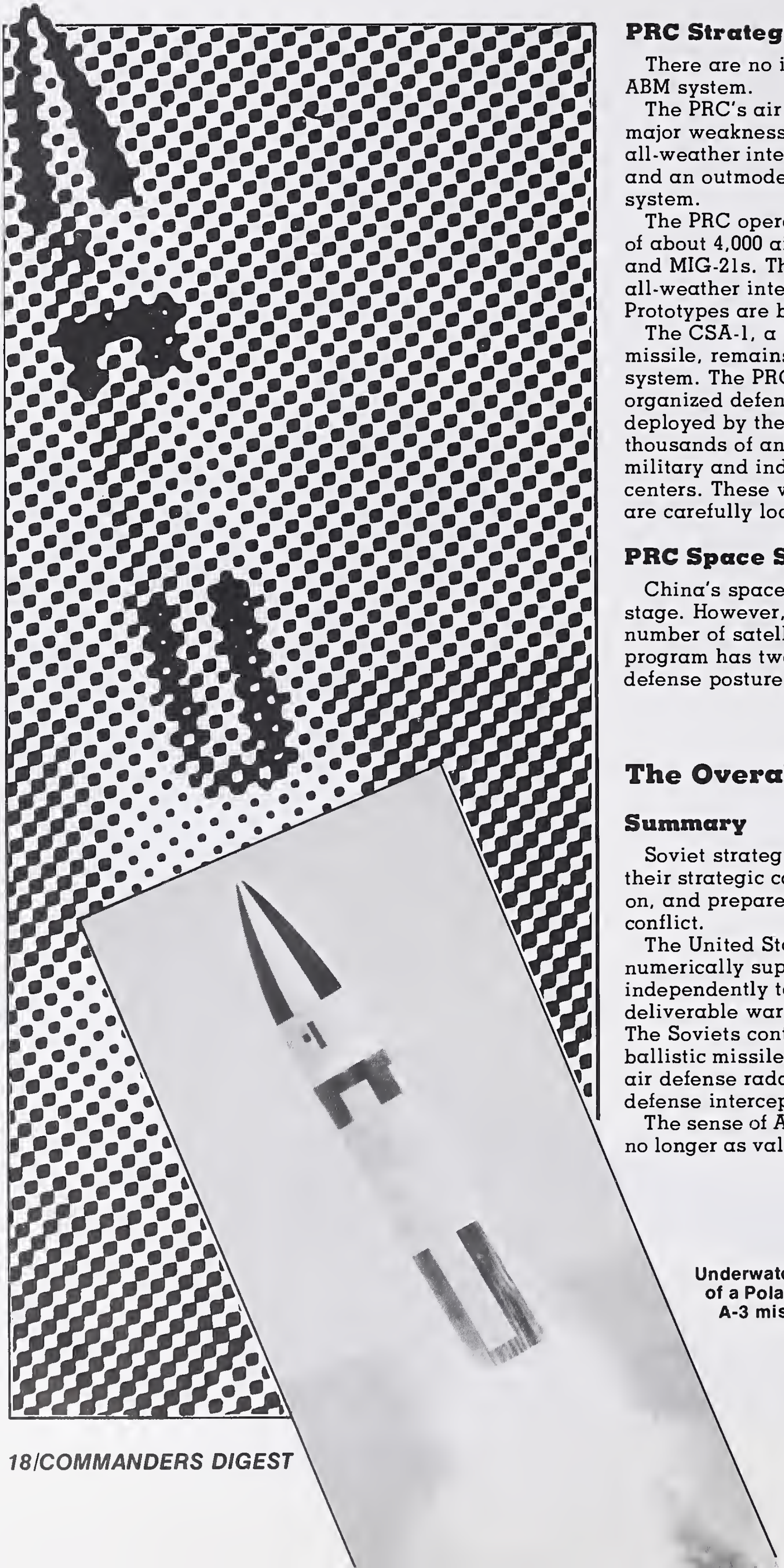
The PRC bomber force, credited with a nuclear delivery capability, remains outmoded when compared to those of the United States and U.S.S.R. It is useful only for regional operations against Eastern and Southern Asia and against Japan and the Western Pacific islands.

PRC production of the TU-16 BADGE jet intermediate-range bomber began in 1968. More than 80 of these Soviet-designed bombers are now operational. Although no radical changes to the BADGER basic design are expected, limited production of ECM, reconnaissance, or tanker variants could be initiated at any time. An air-to-surface missile carrier still remains a possibility in the future.

The IL-28 BEAGLE is an old twin-jet medium bomber but PRC military planners still appear to consider it an important weapon system. Four hundred IL-28s are now operational; the number, if any, configured for nuclear weapons delivery is unknown. Strategic operations against portions of the Soviet Union, all of South Korea, almost all of Vietnam, and parts of India are feasible. The limited range of the aircraft suggests that it also might be used in a theater support role within the PRC.



The CSA-1, a Chinese variant of Soviet SA-2 missile, remains the basic PRC operational SAM system.



Underwater firing of a Polaris A-3 missile.

PRC Strategic Defense

There are no indications of PRC effort to develop an ABM system.

The PRC's air defense system remains subject to major weaknesses, including the severe shortage of all-weather interceptors, a limited number of SAM sites, and an outmoded air defense command and control system.

The PRC operational home defense interceptor force of about 4,000 aircraft includes MIG-15/17s, MIG-19s, and MIG-21s. The Chinese are developing an all-weather interceptor of indigenous design. Prototypes are being test flown.

The CSA-1, a Chinese variant of the Soviet SA-2 missile, remains the basic PRC operational SAM system. The PRC SAM system is a relatively thin, well organized defense, but far short of the massive system deployed by the U.S.S.R. The PRC has also deployed thousands of antiaircraft artillery pieces to defend key military and industrial facilities and major population centers. These weapons, which range from 37 to 100 mm are carefully located.

PRC Space Systems

China's space program remains in the developmental stage. However, the Chinese have orbited a small number of satellites in six years. China's space program has two primary objectives—to enhance their defense posture and to increase prestige abroad.

The Overall Strategic Balance

Summary

Soviet strategic development programs and growth in their strategic capabilities indicate continued emphasis on, and preparedness for the possibility of nuclear conflict.

The United States has the advantage of its numerically superior bomber force, in more independently targetable reentry vehicles, and in deliverable warheads with superior guidance systems. The Soviets continue their advantage in numbers of ballistic missiles, in megatonnage and throw-weight, in air defense radars, in surface-to-air missiles, in air defense interceptors and in civil defense.

The sense of American technological predominance is no longer as valid as it once was. The scope and pace of the Soviet strategic programs demonstrate an increasing momentum in R&D and technology. Today the Soviets have the greater momentum in modernizing their strategic nuclear forces and are now deploying 100 to 150 first-class, fourth-generation ICBMs a year. Moreover, and more ominous, they are developing four new ICBMs, and are continuing to work on other offensive systems. They have successfully demonstrated a capability to destroy certain U.S. satellites in space. This is particularly troublesome because it could interfere with critical wartime operations and communications, and with verification of compliance with arms control agreements.

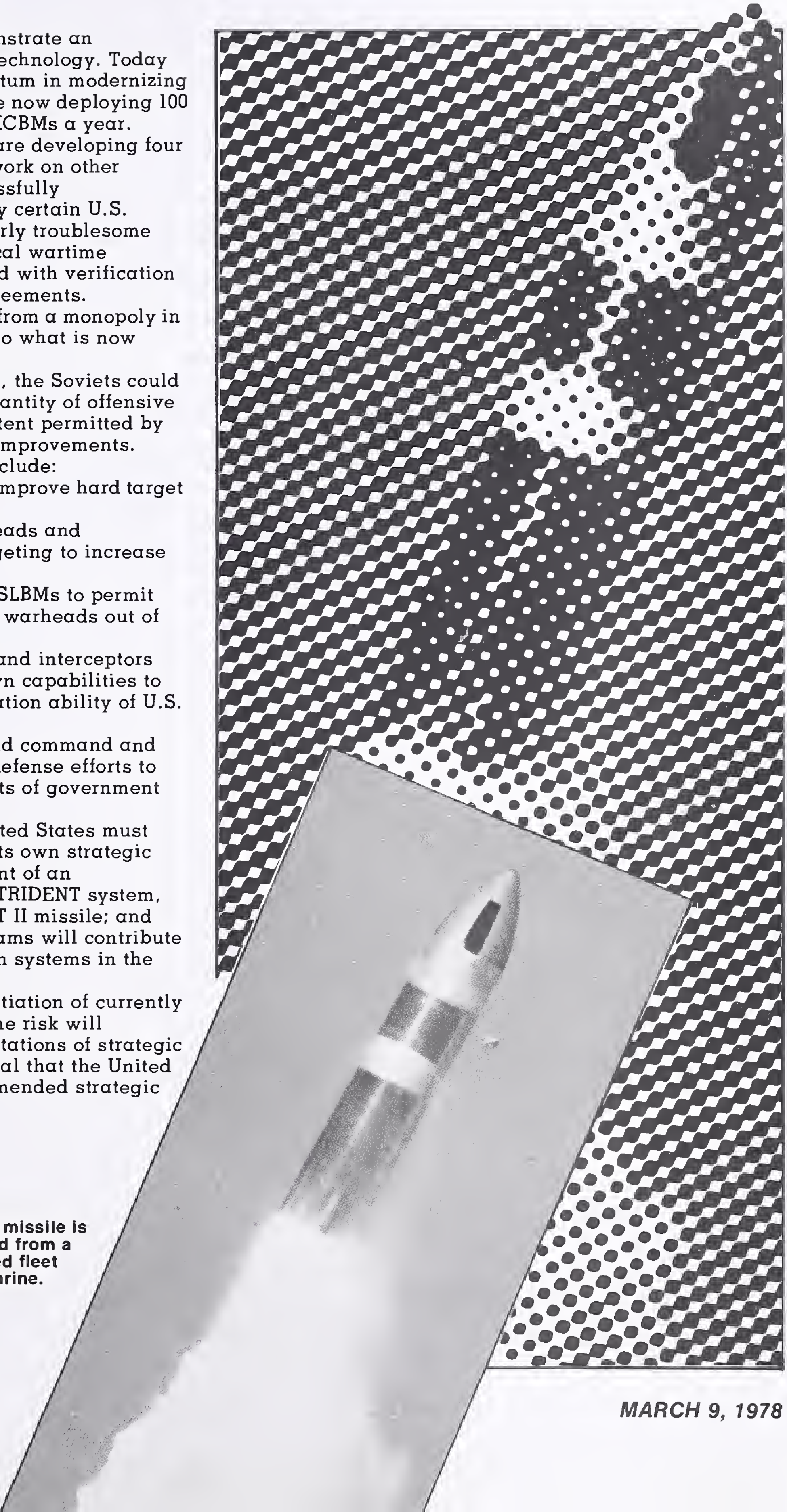
Over the years, the U.S. has gone from a monopoly in nuclear forces, to a predominance, to what is now described as rough equivalence.

Under a strategic arms agreement, the Soviets could be expected to maintain a stable quantity of offensive and defensive forces, and, to the extent permitted by any agreement, pursue qualitative improvements. Specifically, Soviet options could include:

- Increases in missile accuracy to improve hard target capabilities;
- Larger numbers of nuclear warheads and improvements in control and targeting to increase flexibility;
- Increased ranges and MIRVs for SLBMs to permit deployment of larger numbers of warheads out of range of major U.S. ASW assets;
- Development of improved SAMs and interceptors with better look-down, shoot-down capabilities to threaten increasingly the penetration ability of U.S. bombers;
- Increased hardening of forces and command and control systems together with civil defense efforts to improve survivability of key elements of government and society.

To meet these challenges, the United States must diligently pursue improvements in its own strategic forces: the MINUTEMAN; development of an alternate-based ICBM (the MX); the TRIDENT system, including development of a TRIDENT II missile; and cruise missiles. Each of these programs will contribute to the complementary mix of weapon systems in the U.S. nuclear TRIAD.

Should the United States delay initiation of currently recommended strategic programs, the risk will increase. While negotiations on limitations of strategic nuclear forces continue, it is essential that the United States continue the currently recommended strategic programs.



A Poseidon missile is launched from a nuclear-powered fleet ballistic submarine.

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FLARE

WHO'S NEWS IN DEFENSE

MEDAL OF HONOR WINNER

The Medal of Honor was awarded posthumously to U.S. Navy **Capt. Michael J. Estocin,** during ceremonies in the Pentagon's Hall of Heroes, recently. The medal was presented to Mrs. Estocin for her husband's actions on April 20 and 26, 1967, while attached to Attack Squadron 192 embarked in USSS TICONDEROGA (CVA-14).

The citiation accompanying the award reads in part, "On April 20, 1967, Captain (then Lieutenant Commander) Estocin provided continuous warnings to the strike group leaders of the surface-to-air missle (SAM) threats, and personally neutralized three SAM sites. Although his aircraft was severely damaged by an exploding missile, he reentered the target area and relentlessly prosecuted a SHRIKE attack in the face of intense anti-aircraft fire . . . On April 26, 1967, . . . he led an attack on a threatening SAM site, during which his aircraft was seriously damaged by a exploding SAM . . . he regained control of his burning aircraft and courageously launched his SHRIKE missiles before departing the area."

Capt. Michael J. Estocin

RETIREMENTS/ REASSIGNMENTS

Gen. William V. McBride, Air Force Vice Chief of Staff will be retired in grade, effective April 1, 1978.

Replacing **General McBride** will be **Gen. Lew Allen, Jr.,** who is presently serving as commander, Air Force Systems Command, Andrews AFB, Md.

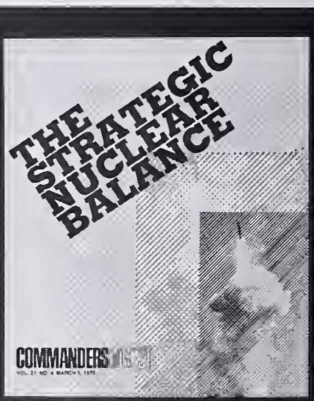
Taking over the reins as commander of Air Force Systems Command will be **Lt. Gen. Alton D. Slay,** Deputy Chief of Staff for Research and Development, Headquarters, USAF. He has been nominated for promotion to general.

Gen. Samuel Jaskilka, USMC, assistant commandant of the Marine Corps, will be placed on the retired list in his current grade, effective July 1, 1978.

VAdm Howard E. Greer, USN, commander of the Naval Air Force, U.S. Atlantic Fleet, will be placed on the retired list in his current grade, effective April 1, 1978.

IM MEMORIAM

Air Force retired **Gen. Daniel "Chappie" James Jr.,** who achieved the highest rank of any black in the U.S. military, died Feb. 25. General James attained the general rank when he put on his fourth star and took over as commander-in-chief of NORAD and the Aerospace Defense Command Sept. 1, 1975. He was retired from the Air Force on Feb. 1, 1978 for medical reasons. At the time of his retirement he was serving as Special Assistant to the Air Force Chief of Staff.



COVER: The Launching of a Minuteman Missile.

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